



## SEQUENCE LISTING

<110> Zuker, Charles S.

The Regents of the University of California

<120> Assays for Sensory Modulators Using a Sensory Cell Specific G-Protein Alpha Subunit

<130> 02307E-092610US

<140> US 09/492,028

<141> 2000-01-26

<150> US 60/117,367

<151> 1999-01-27

<160> 14

<170> PatentIn Ver. 2.1

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subunit (TC-Galpha14)

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Lys	Glu	Asn	Ala	Gln	Ile	Ile	Arg	Glu	Val	Glu	Val	Asp	Lys	Val	Thr	
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gca	ctc	tct	aga	gac	cag	gtg	gca	gcc	atc	aag	cag	ctg	tgg	ctg	gat	558
Ala	Leu	Ser	Arg	Asp	Gln	Val	Ala	Ala	Ile	Lys	Gln	Leu	Trp	Leu	Asp	
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Pro	Gly	Ile	Gln	Glu	Cys	Tyr	Asp	Arg	Arg	Arg	Glu	Tyr	Gln	Leu	Ser	
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subunit (TC-Galpha14)

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Asp Glu Asp Arg Lys Gly Phe Thr Lys Leu Val Tyr Gln Asn Ile Phe			
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Glu Val Asp Lys Val Thr Ala Leu Ser Arg Asp Gln Val Ala Ala Ile			
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Lys Gln Leu Trp Leu Asp Pro Gly Ile Gln Glu Cys Tyr Asp Arg Arg			
130	135	140	
Arg Glu Tyr Gln Leu Ser Asp Ser Ala Lys Tyr Tyr Leu Thr Asp Ile			
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 Arg Arg Lys Trp Ile His Cys Phe Glu Ser Val Thr Ser Ile Ile Phe  
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 Glu Asn Arg Met Glu Glu Ser Lys Ala Leu Phe Arg Thr Ile Ile Thr  
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<220>

<223> rat G-protein coupled receptor B3 (GPCR-B3)

<400> 6

Met Leu Phe Trp Ala Ala His Leu Leu Leu Ser Leu Gln Leu Val Tyr  
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Cys Trp Ala Phe Ser Cys Gln Arg Thr Glu Ser Ser Pro Gly Phe Ser  
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Leu Pro Gly Asp Phe Leu Leu Ala Gly Leu Phe Ser Leu His Gly Asp  
 35 40 45

Cys Leu Gln Val Arg His Arg Pro Leu Val Thr Ser Cys Asp Arg Pro  
 50 55 60

Asp Ser Phe Asn Gly His Gly Tyr His Leu Phe Gln Ala Met Arg Phe  
 65 70 75 80

Thr Val Glu Glu Ile Asn Asn Ser Ser Ala Leu Leu Pro Asn Ile Thr  
 85 90 95

Leu Gly Tyr Glu Leu Tyr Asp Val Cys Ser Glu Ser Ala Asn Val Tyr  
 100 105 110

Ala Thr Leu Arg Val Leu Ala Leu Gln Gly Pro Arg His Ile Glu Ile  
 115 120 125

Gln Lys Asp Leu Arg Asn His Ser Ser Lys Val Val Ala Phe Ile Gly  
 130 135 140

Pro Asp Asn Thr Asp His Ala Val Thr Thr Ala Ala Leu Leu Gly Pro  
 145 150 155 160

Phe Leu Met Pro Leu Val Ser Tyr Glu Ala Ser Ser Val Val Leu Ser  
 165 170 175

Ala Lys Arg Lys Phe Pro Ser Phe Leu Arg Thr Val Pro Ser Asp Arg  
 180 185 190

His Gln Val Glu Val Met Val Gln Leu Leu Gln Ser Phe Gly Trp Val  
 195 200 205  
 Trp Ile Ser Leu Ile Gly Ser Tyr Gly Asp Tyr Gly Gln Leu Gly Val  
 210 215 220  
 Gln Ala Leu Glu Glu Leu Ala Val Pro Arg Gly Ile Cys Val Ala Phe  
 225 230 235 240  
 Lys Asp Ile Val Pro Phe Ser Ala Arg Val Gly Asp Pro Arg Met Gln  
 245 250 255  
 Ser Met Met Gln His Leu Ala Gln Ala Arg Thr Thr Val Val Val Val  
 260 265 270  
 Phe Ser Asn Arg His Leu Ala Arg Val Phe Phe Arg Ser Val Val Leu  
 275 280 285  
 Ala Asn Leu Thr Gly Lys Val Trp Val Ala Ser Glu Asp Trp Ala Ile  
 290 295 300  
 Ser Thr Tyr Ile Thr Ser Val Thr Gly Ile Gln Gly Ile Gly Thr Val  
 305 310 315 320  
 Leu Gly Val Ala Val Gln Gln Arg Gln Val Pro Gly Leu Lys Glu Phe  
 325 330 335  
 Glu Glu Ser Tyr Val Arg Ala Val Thr Ala Ala Pro Ser Ala Cys Pro  
 340 345 350  
 Glu Gly Ser Trp Cys Ser Thr Asn Gln Leu Cys Arg Glu Cys His Thr  
 355 360 365  
 Phe Thr Thr Arg Asn Met Pro Thr Leu Gly Ala Phe Ser Met Ser Ala  
 370 375 380  
 Ala Tyr Arg Val Tyr Glu Ala Val Tyr Ala Val Ala His Gly Leu His  
 385 390 395 400  
 Gln Leu Leu Gly Cys Thr Ser Glu Ile Cys Ser Arg Gly Pro Val Tyr  
 405 410 415  
 Pro Trp Gln Leu Leu Gln Gln Ile Tyr Lys Val Asn Phe Leu Leu His  
 420 425 430  
 Glu Asn Thr Val Ala Phe Asp Asp Asn Gly Asp Thr Leu Gly Tyr Tyr  
 435 440 445  
 Asp Ile Ile Ala Trp Asp Trp Asn Gly Pro Glu Trp Thr Phe Glu Ile  
 450 455 460  
 Ile Gly Ser Ala Ser Leu Ser Pro Val His Leu Asp Ile Asn Lys Thr  
 465 470 475 480  
 Lys Ile Gln Trp His Gly Lys Asn Asn Gln Val Pro Val Ser Val Cys  
 485 490 495  
 Thr Thr Asp Cys Leu Ala Gly His His Arg Val Val Val Gly Ser His  
 500 505 510

His Cys Cys Phe Glu Cys Val Pro Cys Glu Ala Gly Thr Phe Leu Asn  
 515 520 525

Met Ser Glu Leu His Ile Cys Gln Pro Cys Gly Thr Glu Glu Trp Ala  
 530 535 540

Pro Lys Glu Ser Thr Thr Cys Phe Pro Arg Thr Val Glu Phe Leu Ala  
 545 550 555 560

Trp His Glu Pro Ile Ser Leu Val Leu Ile Ala Ala Asn Thr Leu Leu  
 565 570 575

Leu Leu Leu Leu Val Gly Thr Ala Gly Leu Phe Ala Trp His Phe His  
 580 585 590

Thr Pro Val Val Arg Ser Ala Gly Gly Arg Leu Cys Phe Leu Met Leu  
 595 600 605

Gly Ser Leu Val Ala Gly Ser Cys Ser Phe Tyr Ser Phe Phe Gly Glu  
 610 615 620

Pro Thr Val Pro Ala Cys Leu Leu Arg Gln Pro Leu Phe Ser Leu Gly  
 625 630 635 640

Phe Ala Ile Phe Leu Ser Cys Leu Thr Ile Arg Ser Phe Gln Leu Val  
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Ile Ile Phe Lys Phe Ser Thr Lys Val Pro Thr Phe Tyr Arg Thr Trp  
 660 665 670

Ala Gln Asn His Gly Ala Gly Leu Phe Val Ile Val Ser Ser Thr Val  
 675 680 685

His Leu Leu Ile Cys Leu Thr Trp Leu Val Met Trp Thr Pro Arg Pro  
 690 695 700

Thr Arg Glu Tyr Gln Arg Phe Pro His Leu Val Ile Leu Glu Cys Thr  
 705 710 715 720

Glu Val Asn Ser Val Gly Phe Leu Leu Ala Phe Thr His Asn Ile Leu  
 725 730 735

Leu Ser Ile Ser Thr Phe Val Cys Ser Tyr Leu Gly Lys Glu Leu Pro  
 740 745 750

Glu Asn Tyr Asn Glu Ala Lys Cys Val Thr Phe Ser Leu Leu Asn  
 755 760 765

Phe Val Ser Trp Ile Ala Phe Phe Thr Met Ala Ser Ile Tyr Gln Gly  
 770 775 780

Ser Tyr Leu Pro Ala Val Asn Val Leu Ala Gly Leu Thr Thr Leu Ser  
 785 790 795 800

Gly Gly Phe Ser Gly Tyr Phe Leu Pro Lys Cys Tyr Val Ile Leu Cys  
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Tyr Thr Arg Arg Cys Gly Thr Thr  
 835 840

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 <211> 842  
 <212> PRT  
 <213> Mus sp.

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 <223> mouse G-protein coupled receptor B3 (GPCR-B3)

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Phe Ser Leu Pro Gly Asp Phe Leu Leu Ala Gly Leu Phe Ser Leu His  
 35 40 45

Ala Asp Cys Leu Gln Val Arg His Arg Pro Leu Val Thr Ser Cys Asp  
 50 55 60

Arg Ser Asp Ser Phe Asn Gly His Gly Tyr His Leu Phe Gln Ala Met  
 65 70 75 80

Arg Phe Thr Val Glu Glu Ile Asn Asn Ser Thr Ala Leu Leu Pro Asn  
 85 90 95

Ile Thr Leu Gly Tyr Glu Leu Tyr Asp Val Cys Ser Glu Ser Ser Asn  
 100 105 110

Val Tyr Ala Thr Leu Arg Val Pro Ala Gln Gln Gly Thr Gly His Leu  
 115 120 125

Glu Met Gln Arg Asp Leu Arg Asn His Ser Ser Lys Val Val Ala Leu  
 130 135 140

Ile Gly Pro Asp Asn Thr Asp His Ala Val Thr Thr Ala Ala Leu Leu  
 145 150 155 160

Ser Pro Phe Leu Met Pro Leu Val Ser Tyr Glu Ala Ser Ser Val Ile  
 165 170 175

Leu Ser Gly Lys Arg Lys Phe Pro Ser Phe Leu Arg Thr Ile Pro Ser  
 180 185 190

Asp Lys Tyr Gln Val Glu Val Ile Val Arg Leu Leu Gln Ser Phe Gly  
 195 200 205

Trp Val Trp Ile Ser Leu Val Gly Ser Tyr Gly Asp Tyr Gly Gln Leu  
 210 215 220

Gly Val Gln Ala Leu Glu Glu Leu Ala Thr Pro Arg Gly Ile Cys Val  
 225 230 235 240

Ala Phe Lys Asp Val Val Pro Leu Ser Ala Gln Ala Gly Asp Pro Arg  
 245 250 255  
 Met Gln Arg Met Met Leu Arg Leu Ala Arg Ala Arg Thr Thr Val Val  
 260 265 270  
 Val Val Phe Ser Asn Arg His Leu Ala Gly Val Phe Phe Arg Ser Val  
 275 280 285  
 Val Leu Ala Asn Leu Thr Gly Lys Val Trp Ile Ala Ser Glu Asp Trp  
 290 295 300  
 Ala Ile Ser Thr Tyr Ile Thr Asn Val Pro Gly Ile Gln Gly Ile Gly  
 305 310 320  
 Thr Val Leu Gly Val Ala Ile Gln Gln Arg Gln Val Pro Gly Leu Lys  
 325 330 335  
 Glu Phe Glu Glu Ser Tyr Val Gln Ala Val Met Gly Ala Pro Arg Thr  
 340 345 350  
 Cys Pro Glu Gly Ser Trp Cys Gly Thr Asn Gln Leu Cys Arg Glu Cys  
 355 360 365  
 His Ala Phe Thr Thr Trp Asn Met Pro Glu Leu Gly Ala Phe Ser Met  
 370 375 380  
 Ser Ala Ala Tyr Asn Val Tyr Glu Ala Val Tyr Ala Val Ala His Gly  
 385 390 395 400  
 Leu His Gln Leu Leu Gly Cys Thr Ser Gly Thr Cys Ala Arg Gly Pro  
 405 410 415  
 Val Tyr Pro Trp Gln Leu Leu Gln Ile Tyr Lys Val Asn Phe Leu  
 420 425 430  
 Leu His Lys Lys Thr Val Ala Phe Asp Asp Lys Gly Asp Pro Leu Gly  
 435 440 445  
 Tyr Tyr Asp Ile Ile Ala Trp Asp Trp Asn Gly Pro Glu Trp Thr Phe  
 450 455 460  
 Glu Val Ile Gly Ser Ala Ser Leu Ser Pro Val His Leu Asp Ile Asn  
 465 470 475 480  
 Lys Thr Lys Ile Gln Trp His Gly Lys Asn Asn Gln Val Pro Val Ser  
 485 490 495  
 Val Cys Thr Arg Asp Cys Leu Glu Gly His His Arg Leu Val Met Gly  
 500 505 510  
 Ser His His Cys Cys Phe Glu Cys Met Pro Cys Glu Ala Gly Thr Phe  
 515 520 525  
 Leu Asn Thr Ser Glu Leu His Thr Cys Gln Pro Cys Gly Thr Glu Glu  
 530 535 540  
 Trp Ala Pro Glu Gly Ser Ser Ala Cys Phe Ser Arg Thr Val Glu Phe  
 545 550 555 560

Leu Gly Trp His Glu Pro Ile Ser Leu Val Leu Leu Ala Ala Asn Thr  
 565 570 575  
 Leu Leu Leu Leu Leu Ile Gly Thr Ala Gly Leu Phe Ala Trp Arg  
 580 585 590  
 Leu His Thr Pro Val Val Arg Ser Ala Gly Gly Arg Leu Cys Phe Leu  
 595 600 605  
 Met Leu Gly Ser Leu Val Ala Gly Ser Cys Ser Leu Tyr Ser Phe Phe  
 610 615 620  
 Gly Lys Pro Thr Val Pro Ala Cys Leu Leu Arg Gln Pro Leu Phe Ser  
 625 630 635 640  
 Leu Gly Phe Ala Ile Phe Leu Ser Cys Leu Thr Ile Arg Ser Phe Gln  
 645 650 655  
 Leu Val Ile Ile Phe Lys Phe Ser Thr Lys Val Pro Thr Phe Tyr His  
 660 665 670  
 Thr Trp Ala Gln Asn His Gly Ala Gly Ile Phe Val Ile Val Ser Ser  
 675 680 685  
 Thr Val His Leu Phe Leu Cys Leu Thr Trp Leu Ala Met Trp Thr Pro  
 690 695 700  
 Arg Pro Thr Arg Glu Tyr Gln Arg Phe Pro His Leu Val Ile Leu Glu  
 705 710 715 720  
 Cys Thr Glu Val Asn Ser Val Gly Phe Leu Val Ala Phe Ala His Asn  
 725 730 735  
 Ile Leu Leu Ser Ile Ser Thr Phe Val Cys Ser Tyr Leu Gly Lys Glu  
 740 745 750  
 Leu Pro Glu Asn Tyr Asn Glu Ala Lys Cys Val Thr Phe Ser Leu Leu  
 755 760 765  
 Leu His Phe Val Ser Trp Ile Ala Phe Phe Thr Met Ser Ser Ile Tyr  
 770 775 780  
 Gln Gly Ser Tyr Leu Pro Ala Val Asn Val Leu Ala Gly Leu Ala Thr  
 785 790 795 800  
 Leu Ser Gly Gly Phe Ser Gly Tyr Phe Leu Pro Lys Cys Tyr Val Ile  
 805 810 815  
 Leu Cys Arg Pro Glu Leu Asn Asn Thr Glu His Phe Gln Ala Ser Ile  
 820 825 830  
 Gln Asp Tyr Thr Arg Arg Cys Gly Thr Thr  
 835 840

<210> 8  
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 <212> PRT  
 <213> Homo sapiens

&lt;220&gt;

&lt;223&gt; human G-protein coupled receptor B3 (GPCR-B3)

&lt;400&gt; 8

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			20				25						30		

Ile	Thr	Leu	Gly	Tyr	Gln	Leu	Tyr	Asp	Val	Cys	Ser	Asp	Ser	Ala	Asn
			35				40					45			

Val	Tyr	Ala	Thr	Leu	Arg	Val	Leu	Ser	Leu	Pro	Gly	Gln	His	His	Ile
			50				55					60			

Glu	Leu	Gln	Gly	Asp	Leu	Leu	His	Tyr	Ser	Pro	Thr	Val	Leu	Ala	Val
			65				70			75			80		

Ile	Gly	Pro	Asp	Ser	Thr	Asn	Arg	Ala	Ala	Thr	Thr	Ala	Ala	Leu	Leu
			85				90					95			

Ser	Pro	Phe	Leu	Val	His	Ile	Ser	Tyr	Ala	Ala	Ser	Ser	Glu	Thr	Leu
			100				105					110			

Ser	Val	Lys	Arg	Gln	Tyr	Pro	Ser	Phe	Leu	Arg	Thr	Ile	Pro	Asn	Asp
			115				120				125				

Lys	Tyr	Gln	Val	Glu	Thr	Met	Val	Leu	Leu	Leu	Gln	Lys	Phe	Gly	Trp
			130				135				140				

Thr	Trp	Ile	Ser	Leu	Val	Gly	Ser	Ser	Asp	Asp	Tyr	Gly	Gln	Leu	Gly
			145				150			155			160		

Val	Gln	Ala	Leu	Glu	Asn	Gln	Ala	Leu	Val	Arg	Gly	Ile	Cys	Ile	Ala
			165				170					175			

Phe	Lys	Asp	Ile	Met	Pro	Phe	Ser	Ala	Gln	Val	Gly	Asp	Glu	Arg	Met
			180				185					190			

Gln	Cys	Leu	Met	Arg	His	Leu	Ala	Gln	Ala	Gly	Ala	Thr	Val	Val	Val
			195				200					205			

Val	Phe	Ser	Ser	Arg	Gln	Leu	Ala	Arg	Val	Phe	Phe	Glu	Ser	Val	Val
			210				215				220				

Leu	Thr	Asn	Leu	Thr	Gly	Lys	Val	Trp	Val	Ala	Ser	Glu	Ala	Trp	Ala
			225				230			235			240		

Leu	Ser	Arg	His	Ile	Thr	Gly	Val	Pro	Gly	Ile	Gln	Arg	Ile	Gly	Met
			245				250					255			

Val	Leu	Gly	Val	Ala	Ile	Gln	Lys	Arg	Ala	Val	Pro	Gly	Leu	Lys	Ala
			260				265				270				

Phe	Glu	Glu	Ala	Tyr	Ala	Arg	Ala	Asp	Lys	Glu	Ala	Pro	Arg	Pro	Cys
			275				280				285				

His	Lys	Gly	Ser	Trp	Cys	Ser	Ser	Asn	Gln	Leu	Cys	Arg	Glu	Cys	Gln
			290				295				300				

Ala Phe Met Ala His Thr Met Pro Lys Leu Lys Ala Phe Ser Met Ser  
 305 310 315 320  
 Ser Ala Tyr Asn Ala Tyr Arg Ala Val Tyr Ala Val Ala His Gly Leu  
 325 330 335  
 His Gln Leu Leu Gly Cys Ala Ser Glu Leu Cys Ser Arg Gly Arg Val  
 340 345 350  
 Tyr Pro Trp Gln Leu Leu Glu Gln Ile His Lys Val His Phe Leu Leu  
 355 360 365  
 His Lys Asp Thr Val Ala Phe Asn Asp Asn Arg Asp Pro Leu Ser Ser  
 370 375 380  
 Tyr Asn Ile Ile Ala Trp Asp Trp Asn Gly Pro Lys Trp Thr Phe Thr  
 385 390 395 400  
 Val Leu Gly Ser Ser Thr Trp Ser Pro Val Gln Leu Asn Ile Asn Glu  
 405 410 415  
 Thr Lys Ile Gln Trp His Gly Lys Asn His Gln Val Pro Lys Ser Val  
 420 425 430  
 Cys Ser Ser Asp Cys Leu Glu Gly His Gln Arg Val Val Thr Gly Phe  
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 His His Cys Cys Phe Glu Cys Val Pro Cys Gly Ala Gly Thr Phe Leu  
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 Asn Lys Ser Glu Leu Tyr Arg Cys Gln Pro Cys Gly Thr Glu Glu Trp  
 465 470 475 480  
 Ala Pro Glu Gly Ser Gln Thr Cys Phe Pro Arg Thr Val Val Phe Leu  
 485 490 495  
 Ala Leu Arg Glu His Thr Ser Trp Val Leu Leu Ala Ala Asn Thr Leu  
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 Asp Thr Pro Val Val Arg Ser Ala Gly Gly Arg Leu Cys Phe Leu Met  
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 Gly Phe Thr Ile Phe Leu Ser Cys Leu Thr Val Arg Ser Phe Gln Leu  
 580 585 590  
 Ile Ile Ile Phe Lys Phe Ser Thr Lys Val Pro Thr Phe Tyr His Ala  
 595 600 605  
 Trp Val Gln Asn His Gly Ala Gly Leu Phe Val Met Ile Ser Ser Ala  
 610 615 620

Ala Gln Leu Leu Ile Cys Leu Thr Trp Leu Val Val Trp Thr Pro Leu  
 625 630 635 640

Pro Ala Arg Glu Tyr Gln Arg Phe Pro His Leu Val Met Leu Glu Cys  
 645 650 655

Thr Glu Thr Asn Ser Leu Gly Phe Ile Leu Ala Phe Leu Tyr Asn Gly  
 660 665 670

Leu Leu Ser Ile Ser Ala Phe Ala Cys Ser Tyr Leu Gly Lys Asp Leu  
 675 680 685

Pro Glu Asn Tyr Asn Glu Ala Lys Cys Val Thr Phe Ser Leu Leu Phe  
 690 695 700

Asn Phe Val Ser Trp Ile Ala Phe Phe Thr Thr Ala Ser Val Tyr Asp  
 705 710 715 720

Gly Lys Tyr Leu Pro Ala Ala Asn Met Met Ala Gly Leu Ser Ser Leu  
 725 730 735

Ser Ser Gly Phe Gly Gly Tyr Phe Leu Pro Lys Cys Tyr Val Ile Leu  
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Cys Arg Pro Asp Leu Asn Ser Thr Glu His Phe Gln Ala Ser Ile Gln  
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Asp Tyr Thr Arg Arg Cys Gly Ser Thr  
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 <223> rat G-protein coupled receptor (GPCR) B4  
 nucleotide sequence

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 nucleotide sequence

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 tacattagca atgtgtcctg gtacacccccc aacaacacgg tccccatatac catgtgttct 1500  
 aagagttgcc agcctggca aatgaaaaaa cccataggcc tccaccatg 1560  
 tgtgtggact gtccggcggcacctaccc aaccgatcag tagatgagtt taactgtctg 1620  
 tcctgcccgg gttccatgtg gtcttacaag aacaacatcg cttgcttcaa 1680  
 gccttcctgg agtggcacga agtgcacact atcgtggta ccacccatg 1740  
 ttcatcagta cgctggccat tctgctcatc ttctggagac atttccagac 1800  
 cgctcggcgg gcggccccat gtgcttcctg atgctggtgc ccctgctgct 1860  
 atggtccccg tgtatgtggg ccccccacg gtcttcctt gtttctggcg 1920  
 ttcaccgttt gcttctccgt ctgccttc tgcacacgg tgcgttcctt 1980  
 tgcgtttca agatggccag acgcctgcca aggcctactg gtttctggat 2040  
 gggccctacg tcttcgtggc ctcatcactg gccgtcaagg tggccctgg 2100  
 atgctggcca ccaccatcaa ccccatggc cggaccgacc ccgtatgaccc 2160  
 atcctcttca gccaccctaa ctaccgcaac gggctactt tcaacacccag 2220  
 ctgctgtccg tgctgggtt cagttcgtcg tacgtggca aggaactgcc 2280  
 aacgaagcca agttcatcac cctcagcatg accttcctt tcacccctc 2340  
 tgcacgttca tgtctgttca cgtggcgtg ctggtcacca tcatggatct 2400  
 gtgctcaact ttctggccat cggcttgggg tactttggcc ccaaatgtta 2460  
 ttctaccggc agcgcaacac ttcaatgttcaatagca tgattcaggg 2520  
 aggaagagct ag 2532

<210> 11  
 <211> 2010  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <223> human G-protein coupled receptor (GPCR) B4  
 nucleotide sequence

<400> 11

atcacctaca ggcgcacatcg cgatgagctg cgagacaagg tgcgttccc ggctttgctg 60  
 cgtaccacac ccagcgccga ccaccacgtc gaggccatgg tgcagctgat gctgcacttc 120  
 cgctggact ggatcattgt gctgggtgagc agcgacacact atggccgcga caatggccag 180  
 ctgcttggcg agcgcgtggc cccgcgcgcac atctgcacgg cttccagga gacgctgccc 240  
 acactgcagc ccaaccagaa catgacgtca gaggagcgcc aggccttggt gaccattgtg 300  
 gacaagctgc agcagagcac agcgcgcgtc gtggcgtgt tctcgcccgaa cctgaccctg 360  
 taccacttct tcaatgaggt gctgcgcag aacttcacgg gcgccgtgt gatgcctcc 420  
 gagtcctggg ccatcgaccc ggtcctgcac aacctcacgg agctggccaa cttggcacc 480  
 ttccctggca tcaccatcca gagcgtgccc atccggct tcagttagtt ccgcgagtg 540  
 ggcccacagg ctggccgcacc acccctcagc aggaccagcc agagctatac ctgcaaccag 600  
 gagtgcgaca actgcctgaa cgcaccccttgc tccatcaaca ccattctcgat gctctctgg 660  
 gagcgtgtcg tctacagcgt gtactctgcgt gtctatgctg tggccatgc cctgcacagc 720  
 ctcctcggtgt gacaaaag cacctgcacc aagagggtgg tctaccctg gcagctgctt 780  
 gaggagatct ggaaggtaa cttcaacttc ctggaccacc aaatcttctt cgaccgcac 840  
 gggacgtgg ctctgcactt ggagattgtc cagtgcaat gggaccggag ccagaatccc 900  
 ttccagagcg tcgcctccata ctaccccttgc cagcgacagc tgaagaacat caagacatct 960  
 ctgcacacccg tcaacaacac gatccctatg tccatgtgtt ccaagagggtg ccagtcagg 1020  
 caaaaagaaga agcctgtggg catccacgtc tgctgcttcg agtgcacatcg ctgccttccc 1080  
 ggcaccttcc tcaaccacac tgaatgccc aataacgagt ggtcctacca gagtggacc 1140  
 tcctgcttca agcggcagct ggtcttcgtg gaatggcatg aggcacccac catcgctgtg 1200  
 gcccgtgg ccgcctggg ctccctcagc accctggcca tcctgggtat attctggagg 1260  
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 gtgcgttctt tccagatcgt ctgcgccttc aagatggcca gccgcttccc acgcgcctac 1500  
 agctactggg tccgctacca gggccctac gtctctatgg catttatcac ggtactcaa 1560

atggtcattg tggttaattgg catgctggca cggcctcagt cccaccccg tactgacccc 1620  
 gatgacccca agatcacaat tgtctcctgt aaccccaact accgcaacag cctgctgttc 1680  
 aacaccagcc tggacctgct gctctcagtg gtgggtttca gtttcgccta catgggcaaa 1740  
 gagctgccc ccaactacaa cgaggccaag ttcatcaccc tcagcatgac cttctatttc 1800  
 acctcatccg tctccctctg cacttcatg tctgcctaca gcggggtgct gtcaccatc 1860  
 gtggacctct tggtcactgt gctaacctc ctggccatca gcctgggcta cttcggcccc 1920  
 aagtgctaca tgatcctctt ctacccggag cgcaacacgc ccgcctactt caacagcatg 1980  
 atccagggtt acaccatgag gaggactag 2010

<210> 12  
 <211> 843  
 <212> PRT  
 <213> Rattus sp.

<220>  
 <223> rat G-protein coupled receptor (GPCR) B4 amino  
 acid sequence

<400> 12  
 Met Gly Pro Gln Ala Arg Thr Leu Cys Leu Leu Ser Leu Leu His  
 1 5 10 15  
  
 Val Leu Pro Lys Pro Gly Lys Leu Val Glu Asn Ser Asp Phe His Leu  
 20 25 30  
  
 Ala Gly Asp Tyr Leu Leu Gly Gly Leu Phe Thr Leu His Ala Asn Val  
 35 40 45  
  
 Lys Ser Ile Ser His Leu Ser Tyr Leu Gln Val Pro Lys Cys Asn Glu  
 50 55 60  
  
 Phe Thr Met Lys Val Leu Gly Tyr Asn Leu Met Gln Ala Met Arg Phe  
 65 70 75 80  
  
 Ala Val Glu Glu Ile Asn Asn Cys Ser Ser Leu Leu Pro Gly Val Leu  
 85 90 95  
  
 Leu Gly Tyr Glu Met Val Asp Val Cys Tyr Leu Ser Asn Asn Ile His  
 100 105 110  
  
 Pro Gly Leu Tyr Phe Leu Ala Gln Asp Asp Asp Leu Leu Pro Ile Leu  
 115 120 125  
  
 Lys Asp Tyr Ser Gln Tyr Met Pro His Val Val Ala Val Ile Gly Pro  
 130 135 140  
  
 Asp Asn Ser Glu Ser Ala Ile Thr Val Ser Asn Ile Leu Ser His Phe  
 145 150 155 160  
  
 Leu Ile Pro Gln Ile Thr Tyr Ser Ala Ile Ser Asp Lys Leu Arg Asp  
 165 170 175  
  
 Lys Arg His Phe Pro Ser Met Leu Arg Thr Val Pro Ser Ala Thr His  
 180 185 190  
  
 His Ile Glu Ala Met Val Gln Leu Met Val His Phe Gln Trp Asn Trp  
 195 200 205  
  
 Ile Val Val Leu Val Ser Asp Asp Asp Tyr Gly Arg Glu Asn Ser His  
 210 215 220

Leu Leu Ser Gln Arg Leu Thr Lys Thr Ser Asp Ile Cys Ile Ala Phe  
 225 230 235 240  
 Gln Glu Val Leu Pro Ile Pro Glu Ser Ser Gln Val Met Arg Ser Glu  
 245 250 255  
 Glu Gln Arg Gln Leu Asp Asn Ile Leu Asp Lys Leu Arg Arg Thr Ser  
 260 265 270  
 Ala Arg Val Val Val Phe Ser Pro Glu Leu Ser Leu Tyr Ser Phe  
 275 280 285  
 Phe His Glu Val Leu Arg Trp Asn Phe Thr Gly Phe Val Trp Ile Ala  
 290 295 300  
 Ser Glu Ser Trp Ala Ile Asp Pro Val Leu His Asn Leu Thr Glu Leu  
 305 310 315 320  
 Arg His Thr Gly Thr Phe Leu Gly Val Thr Ile Gln Arg Val Ser Ile  
 325 330 335  
 Pro Gly Phe Ser Gln Phe Arg Val Arg Arg Asp Lys Pro Gly Tyr Pro  
 340 345 350  
 Val Pro Asn Thr Thr Asn Leu Arg Thr Thr Cys Asn Gln Asp Cys Asp  
 355 360 365  
 Ala Cys Leu Asn Thr Thr Lys Ser Phe Asn Asn Ile Leu Ile Leu Ser  
 370 375 380  
 Gly Glu Arg Val Val Tyr Ser Val Tyr Ser Ala Val Tyr Ala Val Ala  
 385 390 395 400  
 His Ala Leu His Arg Leu Leu Gly Cys Asn Arg Val Arg Cys Thr Lys  
 405 410 415  
 Gln Lys Val Tyr Pro Trp Gln Leu Leu Arg Glu Ile Trp His Val Asn  
 420 425 430  
 Phe Thr Leu Leu Gly Asn Arg Leu Phe Phe Asp Gln Gln Gly Asp Met  
 435 440 445  
 Pro Met Leu Leu Asp Ile Ile Gln Trp Gln Trp Asp Leu Ser Gln Asn  
 450 455 460  
 Pro Phe Gln Ser Ile Ala Ser Tyr Ser Pro Thr Ser Lys Arg Leu Thr  
 465 470 475 480  
 Tyr Ile Asn Asn Val Ser Trp Tyr Thr Pro Asn Asn Thr Val Pro Val  
 485 490 495  
 Ser Met Cys Ser Lys Ser Cys Gln Pro Gly Gln Met Lys Lys Ser Val  
 500 505 510  
 Gly Leu His Pro Cys Cys Phe Glu Cys Leu Asp Cys Met Pro Gly Thr  
 515 520 525  
 Tyr Leu Asn Arg Ser Ala Asp Glu Phe Asn Cys Leu Ser Cys Pro Gly  
 530 535 540

Ser Met Trp Ser Tyr Lys Asn Asp Ile Thr Cys Phe Gln Arg Arg Pro  
 545 550 555 560  
 Thr Phe Leu Glu Trp His Glu Val Pro Thr Ile Val Val Ala Ile Leu  
 565 570 575  
 Ala Ala Leu Gly Phe Phe Ser Thr Leu Ala Ile Leu Phe Ile Phe Trp  
 580 585 590  
 Arg His Phe Gln Thr Pro Met Val Arg Ser Ala Gly Gly Pro Met Cys  
 595 600 605  
 Phe Leu Met Leu Val Pro Leu Leu Ala Phe Gly Met Val Pro Val  
 610 615 620  
 Tyr Val Gly Pro Pro Thr Val Phe Ser Cys Phe Cys Arg Gln Ala Phe  
 625 630 635 640  
 Phe Thr Val Cys Phe Ser Ile Cys Leu Ser Cys Ile Thr Val Arg Ser  
 645 650 655  
 Phe Gln Ile Val Cys Val Phe Lys Met Ala Arg Arg Leu Pro Ser Ala  
 660 665 670  
 Tyr Ser Phe Trp Met Arg Tyr His Gly Pro Tyr Val Phe Val Ala Phe  
 675 680 685  
 Ile Thr Ala Ile Lys Val Ala Leu Val Val Gly Asn Met Leu Ala Thr  
 690 695 700  
 Thr Ile Asn Pro Ile Gly Arg Thr Asp Pro Asp Asp Pro Asn Ile Met  
 705 710 715 720  
 Ile Leu Ser Cys His Pro Asn Tyr Arg Asn Gly Leu Leu Phe Asn Thr  
 725 730 735  
 Ser Met Asp Leu Leu Leu Ser Val Leu Gly Phe Ser Phe Ala Tyr Met  
 740 745 750  
 Gly Lys Glu Leu Pro Thr Asn Tyr Asn Glu Ala Lys Phe Ile Thr Leu  
 755 760 765  
 Ser Met Thr Phe Ser Phe Thr Ser Ser Ile Ser Leu Cys Thr Phe Met  
 770 775 780  
 Ser Val His Asp Gly Val Leu Val Thr Ile Met Asp Leu Leu Val Thr  
 785 790 795 800  
 Val Leu Asn Phe Leu Ala Ile Gly Leu Gly Tyr Phe Gly Pro Lys Cys  
 805 810 815  
 Tyr Met Ile Leu Phe Tyr Pro Glu Arg Asn Thr Ser Ala Tyr Phe Asn  
 820 825 830  
 Ser Met Ile Gln Gly Tyr Thr Met Arg Lys Ser  
 835 840

<210> 13  
 <211> 843  
 <212> PRT  
 <213> Mus sp.

<220>  
 <223> mouse G-protein coupled receptor (GPCR) B4 amino acid sequence

<400> 13  
 Met Gly Pro Gln Ala Arg Thr Leu His Leu Leu Phe Leu Leu His  
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 Ala Leu Pro Lys Pro Val Met Leu Val Gly Asn Ser Asp Phe His Leu  
 20 25 30  
 Ala Gly Asp Tyr Leu Leu Gly Gly Leu Phe Thr Leu His Ala Asn Val  
 35 40 45  
 Lys Ser Val Ser His Leu Ser Tyr Leu Gln Val Pro Lys Cys Asn Glu  
 50 55 60  
 Tyr Asn Met Lys Val Leu Gly Tyr Asn Leu Met Gln Ala Met Arg Phe  
 65 70 75 80  
 Ala Val Glu Glu Ile Asn Asn Cys Ser Ser Leu Leu Pro Gly Val Leu  
 85 90 95  
 Leu Gly Tyr Glu Met Val Asp Val Cys Tyr Leu Ser Asn Asn Ile Gln  
 100 105 110  
 Pro Gly Leu Tyr Phe Leu Ser Gln Ile Asp Asp Phe Leu Pro Ile Leu  
 115 120 125  
 Lys Asp Tyr Ser Gln Tyr Arg Pro Gln Val Val Ala Val Ile Gly Pro  
 130 135 140  
 Asp Asn Ser Glu Ser Ala Ile Thr Val Ser Asn Ile Leu Ser Tyr Phe  
 145 150 155 160  
 Leu Val Pro Gln Val Thr Tyr Ser Ala Ile Thr Asp Lys Leu Gln Asp  
 165 170 175  
 Lys Arg Arg Phe Pro Ala Met Leu Arg Thr Val Pro Ser Ala Thr His  
 180 185 190  
 His Ile Glu Ala Met Val Gln Leu Met Val His Phe Gln Trp Asn Trp  
 195 200 205  
 Ile Val Val Leu Val Ser Asp Asp Asp Tyr Gly Arg Glu Asn Ser His  
 210 215 220  
 Leu Leu Ser Gln Arg Leu Thr Asn Thr Gly Asp Ile Cys Ile Ala Phe  
 225 230 235 240  
 Gln Glu Val Leu Pro Val Pro Glu Pro Asn Gln Ala Val Arg Pro Glu  
 245 250 255  
 Glu Gln Asp Gln Leu Asp Asn Ile Leu Asp Lys Leu Arg Arg Thr Ser  
 260 265 270

Ala Arg Val Val Val Ile Phe Ser Pro Glu Leu Ser Leu His Asn Phe  
 275 280 285  
 Phe Arg Glu Val Leu Arg Trp Asn Phe Thr Gly Phe Val Trp Ile Ala  
 290 295 300  
 Ser Glu Ser Trp Ala Ile Asp Pro Val Leu His Asn Leu Thr Glu Leu  
 305 310 315 320  
 Arg His Thr Gly Thr Phe Leu Gly Val Thr Ile Gln Arg Val Ser Ile  
 325 330 335  
 Pro Gly Phe Ser Gln Phe Arg Val Arg His Asp Lys Pro Gly Tyr Arg  
 340 345 350  
 Met Pro Asn Glu Thr Ser Leu Arg Thr Thr Cys Asn Gln Asp Cys Asp  
 355 360 365  
 Ala Cys Met Asn Ile Thr Glu Ser Phe Asn Asn Val Leu Met Leu Ser  
 370 375 380  
 Gly Glu Arg Val Val Tyr Ser Val Tyr Ser Ala Val Tyr Ala Val Ala  
 385 390 395 400  
 His Thr Leu His Arg Leu Leu His Cys Asn Gln Val Arg Cys Thr Lys  
 405 410 415  
 Gln Ile Val Tyr Pro Trp Gln Leu Leu Arg Glu Ile Trp His Val Asn  
 420 425 430  
 Phe Thr Leu Leu Gly Asn Gln Leu Phe Phe Asp Glu Gln Gly Asp Met  
 435 440 445  
 Pro Met Leu Leu Asp Ile Ile Gln Trp Gln Trp Gly Leu Ser Gln Asn  
 450 455 460  
 Pro Phe Gln Ser Ile Ala Ser Tyr Ser Pro Thr Glu Thr Arg Leu Thr  
 465 470 475 480  
 Tyr Ile Ser Asn Val Ser Trp Tyr Thr Pro Asn Asn Thr Val Pro Ile  
 485 490 495  
 Ser Met Cys Ser Lys Ser Cys Gln Pro Gly Gln Met Lys Lys Pro Ile  
 500 505 510  
 Gly Leu His Pro Cys Cys Phe Glu Cys Val Asp Cys Pro Pro Asp Thr  
 515 520 525  
 Tyr Leu Asn Arg Ser Val Asp Glu Phe Asn Cys Leu Ser Cys Pro Gly  
 530 535 540  
 Ser Met Trp Ser Tyr Lys Asn Asn Ile Ala Cys Phe Lys Arg Arg Leu  
 545 550 555 560  
 Ala Phe Leu Glu Trp His Glu Val Pro Thr Ile Val Val Thr Ile Leu  
 565 570 575  
 Ala Ala Leu Gly Phe Ile Ser Thr Leu Ala Ile Leu Leu Ile Phe Trp  
 580 585 590

Arg His Phe Gln Thr Pro Met Val Arg Ser Ala Gly Gly Pro Met Cys  
 595 600 605

Phe Leu Met Leu Val Pro Leu Leu Ala Phe Gly Met Val Pro Val  
 610 615 620

Tyr Val Gly Pro Pro Thr Val Phe Ser Cys Phe Cys Arg Gln Ala Phe  
 625 630 635 640

Phe Thr Val Cys Phe Ser Val Cys Leu Ser Cys Ile Thr Val Arg Ser  
 645 650 655

Phe Gln Ile Val Cys Val Phe Lys Met Ala Arg Arg Leu Pro Ser Ala  
 660 665 670

Tyr Gly Phe Trp Met Arg Tyr His Gly Pro Tyr Val Phe Val Ala Phe  
 675 680 685

Ile Thr Ala Val Lys Val Ala Leu Val Ala Gly Asn Met Leu Ala Thr  
 690 695 700

Thr Ile Asn Pro Ile Gly Arg Thr Asp Pro Asp Asp Pro Asn Ile Ile  
 705 710 715 720

Ile Leu Ser Cys His Pro Asn Tyr Arg Asn Gly Leu Leu Phe Asn Thr  
 725 730 735

Ser Met Asp Leu Leu Leu Ser Val Leu Gly Phe Ser Phe Ala Tyr Val  
 740 745 750

Gly Lys Glu Leu Pro Thr Asn Tyr Asn Glu Ala Lys Phe Ile Thr Leu  
 755 760 765

Ser Met Thr Phe Ser Phe Thr Ser Ser Ile Ser Leu Cys Thr Phe Met  
 770 775 780

Ser Val His Asp Gly Val Leu Val Thr Ile Met Asp Leu Leu Val Thr  
 785 790 795 800

Val Leu Asn Phe Leu Ala Ile Gly Leu Gly Tyr Phe Gly Pro Lys Cys  
 805 810 815

Tyr Met Ile Leu Phe Tyr Pro Glu Arg Asn Thr Ser Ala Tyr Phe Asn  
 820 825 830

Ser Met Ile Gln Gly Tyr Thr Met Arg Lys Ser  
 835 840

<210> 14  
 <211> 669  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> human G-protein coupled receptor (GPCR) B4 amino  
 acid sequence

<400> 14  
 Ile Thr Tyr Ser Ala Ile Ser Asp Glu Leu Arg Asp Lys Val Arg Phe  
 1 5 10 15

Pro Ala Leu Leu Arg Thr Thr Pro Ser Ala Asp His His Val Glu Ala  
 20 25 30

Met Val Gln Leu Met Leu His Phe Arg Trp Asn Trp Ile Ile Val Leu  
 35 40 45

Val Ser Ser Asp Thr Tyr Gly Arg Asp Asn Gly Gln Leu Leu Gly Glu  
 50 55 60

Arg Val Ala Arg Arg Asp Ile Cys Ile Ala Phe Gln Glu Thr Leu Pro  
 65 70 80

Thr Leu Gln Pro Asn Gln Asn Met Thr Ser Glu Glu Arg Gln Arg Leu  
 85 90 95

Val Thr Ile Val Asp Lys Leu Gln Gln Ser Thr Ala Arg Val Val Val  
 100 105 110

Val Phe Ser Pro Asp Leu Thr Leu Tyr His Phe Phe Asn Glu Val Leu  
 115 120 125

Arg Gln Asn Phe Thr Gly Ala Val Trp Ile Ala Ser Glu Ser Trp Ala  
 130 135 140

Ile Asp Pro Val Leu His Asn Leu Thr Glu Leu Gly His Leu Gly Thr  
 145 150 155 160

Phe Leu Gly Ile Thr Ile Gln Ser Val Pro Ile Pro Gly Phe Ser Glu  
 165 170 175

Phe Arg Glu Trp Gly Pro Gln Ala Gly Pro Pro Pro Leu Ser Arg Thr  
 180 185 190

Ser Gln Ser Tyr Thr Cys Asn Gln Glu Cys Asp Asn Cys Leu Asn Ala  
 195 200 205

Thr Leu Ser Phe Asn Thr Ile Leu Arg Leu Ser Gly Glu Arg Val Val  
 210 215 220

Tyr Ser Val Tyr Ser Ala Val Tyr Ala Val Ala His Ala Leu His Ser  
 225 230 235 240

Leu Leu Gly Cys Asp Lys Ser Thr Cys Thr Lys Arg Val Val Tyr Pro  
 245 250 255

Trp Gln Leu Leu Glu Glu Ile Trp Lys Val Asn Phe Thr Leu Leu Asp  
 260 265 270

His Gln Ile Phe Phe Asp Pro Gln Gly Asp Val Ala Leu His Leu Glu  
 275 280 285

Ile Val Gln Trp Gln Trp Asp Arg Ser Gln Asn Pro Phe Gln Ser Val  
 290 295 300

Ala Ser Tyr Tyr Pro Leu Gln Arg Gln Leu Lys Asn Ile Lys Thr Ser  
 305 310 315 320

Leu His Thr Val Asn Asn Thr Ile Pro Met Ser Met Cys Ser Lys Arg  
 325 330 335

Cys Gln Ser Gly Gln Lys Lys Pro Val Gly Ile His Val Cys Cys  
 340 345 350

Phe Glu Cys Ile Asp Cys Leu Pro Gly Thr Phe Leu Asn His Thr Glu  
 355 360 365

Cys Pro Asn Asn Glu Trp Ser Tyr Gln Ser Glu Thr Ser Cys Phe Lys  
 370 375 380

Arg Gln Leu Val Phe Leu Glu Trp His Glu Ala Pro Thr Ile Ala Val  
 385 390 395 400

Ala Leu Leu Ala Ala Leu Gly Phe Leu Ser Thr Leu Ala Ile Leu Val  
 405 410 415

Ile Phe Trp Arg His Phe Gln Thr Pro Ile Val Arg Ser Ala Gly Gly  
 420 425 430

Pro Met Cys Phe Leu Met Leu Thr Leu Leu Val Ala Tyr Met Val  
 435 440 445

Val Pro Val Tyr Val Gly Pro Pro Lys Val Ser Thr Cys Leu Cys Arg  
 450 455 460

Gln Ala Leu Phe Pro Leu Cys Phe Thr Ile Cys Ile Ser Cys Ile Ala  
 465 470 475 480

Val Arg Ser Phe Gln Ile Val Cys Ala Phe Lys Met Ala Ser Arg Phe  
 485 490 495

Pro Arg Ala Tyr Ser Tyr Trp Val Arg Tyr Gln Gly Pro Tyr Val Ser  
 500 505 510

Met Ala Phe Ile Thr Val Leu Lys Met Val Ile Val Val Ile Gly Met  
 515 520 525

Leu Ala Arg Pro Gln Ser His Pro Arg Thr Asp Pro Asp Asp Pro Lys  
 530 535 540

Ile Thr Ile Val Ser Cys Asn Pro Asn Tyr Arg Asn Ser Leu Leu Phe  
 545 550 555 560

Asn Thr Ser Leu Asp Leu Leu Ser Val Val Gly Phe Ser Phe Ala  
 565 570 575

Tyr Met Gly Lys Glu Leu Pro Thr Asn Tyr Asn Glu Ala Lys Phe Ile  
 580 585 590

Thr Leu Ser Met Thr Phe Tyr Phe Thr Ser Ser Val Ser Leu Cys Thr  
 595 600 605

Phe Met Ser Ala Tyr Ser Gly Val Leu Val Thr Ile Val Asp Leu Leu  
 610 615 620

Val Thr Val Leu Asn Leu Leu Ala Ile Ser Leu Gly Tyr Phe Gly Pro  
 625 630 635 640

Lys Cys Tyr Met Ile Leu Phe Tyr Pro Glu Arg Asn Thr Pro Ala Tyr  
645 650 655

Phe Asn Ser Met Ile Gln Gly Tyr Thr Met Arg Arg Asp  
660 665